

REMARKS

In order to expedite the prosecution of the present application, Claim 2 has been amended in order to more particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Specifically speaking, Claim 2 now recites that the polishing tape is made of a satin fabric. Support for this amendment can be found in the last two lines on specification page 16. No new matter has been added.

Claim 1 has been rejected under 35 USC 103(a) as being unpatentable over Shige et al in view of Tanaka and further in view of Tani et al. Claim 2 has been rejected under 35 USC 103(a) as being unpatentable over Shige et al in view of Tanaka. Applicants respectfully traverse these grounds of rejection and urge reconsideration in light of the following comments.

As pointed out previously, a first embodiment of the present invention is directed to a polishing tape for polishing the surface of a substrate of a magnetic recording medium. The polishing tape is made of a flocked cloth comprising a substrate and a flocked material formed on the substrate with the flocked cloth having a tensile strength in a longitudinal direction as measured by method A defined in JIS L 1096-1990 of not more than 25 kgf/50 mm and a tensile elongation of not more than 5%/5 kg/50 m. A single yarn of a dissolution-decomposition type composite fiber consisting of a nylon component and a dissolving component is used as the flock material and a thin-fineness filament obtained by splitting a single yarn is used as the pile. The pile is formed at a pile height within a range from 0.2-1.0 mm and pile density within a range from 100-200 g/m² and 80% or more of the pile is formed at a fineness of less than 0.3 d.

A second embodiment of the present invention is directed to a polishing tape for polishing the surface of a substrate of a magnetic recording medium. The polishing tape is made of

a satin fabric with the sum total of a warp cover factor and a weft cover factor of the satin fabric being within a range of from 2,000 to 4,500. A multifilament made of nylon or polyester fibers having a single yarn fineness of not more than 5 d is used as a warp and a multifilament, whose constituent single yarn is formed into a dissolution-decomposition type composite fiber consisting of a nylon component and a dissolving component, is used as a weft. 80% or more of a thin-fineness filament obtained by splitting a single yarn of the dissolution-decomposition type composite fiber is formed in a fineness of less than 0.3 d.

As pointed out previously, the present invention avoids problems associated with conventional polishing tapes in that it provides a polishing tape having a polished substrate having a small surface roughness as compared to conventional polishing tapes, prevents the occurrence of crushing and gives noticeably improved levitation characteristics to the magnetic head. It is respectfully submitted that the presently claimed invention is patentably distinguishable over the prior art cited by the Examiner.

It is noted in the outstanding Office Action that the Examiner is utilizing Tani et al, U.S. Patent No. 6 074 284, instead of WO 99/10569. It is noted that U.S. Patent No. 6 074 284 is a continuation of PCT/SG97/00051, filed on October 3, 1997 and believed that the Examiner is using the filing date of the PCT application as the effective U.S. filing date of U.S. Patent No. 6 074 284. However, PCT/SG97/00051 was filed before November 29, 2000. As pointed out on MPEP page 700-36, the PCT filing date cannot be used and only the actual U.S. filing date of April 23, 1999 can be used in the present situation. Therefore, due to the earlier perfecting of Applicants foreign priority date of September 3, 1998, this reference is not available as prior art under 35 USC 102 against the currently presented claims.

The Shige et al reference discloses a method for polishing or texturizing a magnetic disc comprising a step of

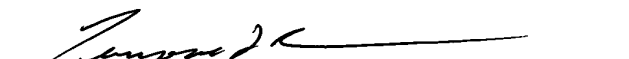
bringing a tape traveling at a predetermined direction and made of fibers having a fineness of not more than 0.1 d and a slurry containing polishing grains dispersed therein into contact with a substrate of a magnetic disc. The Shige et al reference has no disclosure with respect to the polishing tape having a pile with a pile height within a range of from 0.2-1.0 mm and a pile density within the range of from 100-200 g/m², as required by Claim 1, or that the sum total of a warp cover factor and a weft cover factor of a fabric making up the polishing tape be within a range of from 2,000-4,500. Additionally, the Shige et al reference contains no disclosure regarding the fabric of the polishing tape being a satin fabric. As such, the secondary Tanaka et al reference must provide the motivation to one of ordinary skill in the art to make these modifications to the Shige et al reference and in order to present a proper showing of prima facie obviousness under 35 USC 103. It is respectfully submitted that the Tanaka et al reference contains no such disclosures.

The Tanaka et al reference discloses an abrasive sheet containing, on at least one surface thereof, a layer of non-woven fabric comprising not less than 80% of fibers having a fiber diameter of ten microns or less. The nonwoven fabric is selected from the group consisting of an entangled nonwoven fabric and a melt-blown nonwoven fabric. However, this reference adds nothing to the previously discussed reference in that it does not show a pile height within a range of from 0.2 to 1.0 mm, a pile density within a range of from 100 to 200 g/m², a cover factor within a range of from 2,000 to 4,500 and the cloth being satin. As such, it is respectfully submitted that Shige et al in combination with Tanaka et al does not present a showing of prima facie obviousness under 35 USC 103 with respect to currently presented Claims 1 and 2.

The Declaration Under 37 CFR 1.132 submitted in the previous Response inadvertently contained some errors or misstatements therein. Enclosed herewith for the Examiner's benefit is another Declaration Under 37 CFR 1.132 which

corrects and adds to the disclosure of the originally filed Declaration Under 37 CFR 1.132. In the enclosed Declaration, the properties of surface roughness was measured in accordance with JIS B 1061 and the processing speed was calculated by subtracting the substrate's thickness after processing from the substrate's thickness before processing (in nanometers) and dividing this quantity by the processing time in minutes. As pointed out in the previous response, the Comparative Examples contained in the Declaration are closer to the present invention than the prior art cited by the Examiner. As shown in the enclosed Declaration Under 37 CFR 1.132, the polishing cloth of the present invention was superior to the comparative polishing cloths tested in the Declaration in that they did not produce any scratches and allowed a higher processing speed. This is clearly unexpected in light of the prior art cited by the Examiner and establishes the patentability of the presently claimed invention thereover. The Examiner is respectfully requested to reconsider the present application and to pass it to issue.

Respectfully submitted,


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Encl: Declaration Under 37 CFR 1.132
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PATENT APPLICATION
IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicants: Akira EBIHARA et al
For: POLISHING TAPE USED IN PRODUCTION
OF MAGNETIC RECORDING MEDIUM
Serial No.: 09/806 082 Group: 1771
Confirmation No.: 4908
Filed: August 20, 2001 Examiner: Juska
International Application No.: PCT/JP99/05434
International Filing Date: September 30, 1999
Atty. Docket No.: Kanebo Case 5

Commissioner for Patents
P.O. Box 1450
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DECLARATION UNDER 37 CFR 1.132

I, the undersigned, hereby declare:

I am one of the inventors of the invention described and claimed in application Serial No. 09/806 082, filed on August 20, 2001.

I hereby incorporate herein, by reference thereto, the contents of the Examples and Comparative Examples contained on pages 19-24 of the above-identified application.

I have carried out additional tests to illustrate the criticality of the claimed parameters of the polishing tape of the present invention.

Polishing tapes were prepared according to the procedures set forth in application Serial No. 09/806 082. The comparative polishing tapes prepared in the comparative examples shown below were prepared by the same method as the inventive polishing tapes in the examples shown below except that the comparative polishing tapes had a parameter that was outside the scope of the present invention. The results are in the tables blow.

		TABLE 1					
		Example 1	Comparative Example 1	Example 2	Example 3	Example 4	Comparative Example 2
Constituent features	Fibre fiber diameter (µm)	6.0	7.0	4.3	4.3	4.3	4.3
	Fibre fiber fineness (d)	0.29	0.39	0.15	0.15	0.15	0.15
	Fibre material	Nylon 6	Nylon 6	Nylon 6	Nylon 6	Nylon 6	Nylon 6
	Fibre height (mm)	0.5	0.5	0.2	0.5	1.0	0.1
	Flocking density (g/m ²)	150	150	180	180	180	180
	Opening processing step	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Results of Use	Surface roughness of substrate after polishing: Ra (Å)	13.2	13.9	12.7	11.1	13.8	9.5
	Processing speed (mm)	112	95	92	107	116	55
Measurement of the overall trend other		Good no scratch	Coming across large scratches occasionally	Good no scratch	Good no scratch	Good no scratch	Good no scratch
processing speed/Ra ^{1.5}		2.335	1.833	2.033	2.893	2.263	1.898

processing speed / Ra^{1.5} ≥ 2 good

< 2 bad

		TABLE 2				
		Comparative Example 3	Example 5	Example 6	Comparative Example 4	Comparative Example 5
Constituent features	Fiber diameter (μm)	4.3	6.0	6.0	6.0	6.0
	Fiber fineness (d)	0.15	0.29	0.29	0.29	0.29
	Fiber material	Nylon 6	Nylon 6	Nylon 6	Nylon 6	Nylon 6
	Fiber height (mm)	1.2	0.5	0.5	0.5	0.5
	Flocking density (g/m^2)	180	100	200	80	220
	Opening processing step	Continuous	Continuous	Continuous	Continuous	Continuous
Results of use	Surface roughness of substrate after polishing; Ra (Å)	13.0	14.1	11.8	16.9	9.2
	Processing speed (mm)	135	127	92	141	68
Processing of the other		Coming across large scratches occasionally	Good no scratch	Good no scratch	Coming across large scratches occasionally	Good coming across large scratches occasionally
processing speed/Ra ^{1.5}		1.768	2.399	2.270	2.030	2.437

		TABLE 3						
		Example 1	Comparative Example 1	Example 2	Example 3	Example 4	Comparative Example 2	Comparative Example 3
Constituent features	Fiber diameter (μm)	5.0	7.0	4.3	4.3	4.3	4.3	4.3
	Fiber fineness (d)	0.29	0.39	0.15	0.15	0.13	0.13	0.15
	Fiber polymer	Nylon 6	Nylon 6	Nylon 6	Nylon 6	Nylon 6	Nylon 6	Nylon 6
	Cover factor	3.198	2.875	3.341	2.016	4.576	1.843	4.720
Results of use	Surface roughness of substrate after polishing; Ra (Å)	11.2	14.3	9.2	11.1	7.8	15.1	6.8
	Processing speed (mm)	88	114	86	103	75	122	66
Processing of the other		Good no scratch	Coming across large scratches occasionally	Good no scratch	Good no scratch	Good no scratch	Coming across large scratches occasionally	Difficulty of making the tape
processing speed/Ra ^{1.5}		2.348	2.108	3.082	2.839	3.351	2.079	3.722

DISCUSSION OF RESULTS

As can be seen from Tables 1 and 2 above, the polishing tapes of Comparative Example 1, which had a pile fiber fineness greater than the claimed upper limit of Claim 1, Comparative Example 2, which had a pile height less than the claimed lower limit of Claim 1, Comparative Example 3, which had a pile height greater than the claimed upper limit of Claim 1, Comparative Example 4, which had a pile density less than the claimed lower limit of Claim 1, and Comparative Example 5, which had a pile density greater than the claimed upper limit of Claim 1, were all inferior to the polishing tapes of Examples 1-6, which correspond to currently presented Claim 1.

Table 3 compares polishing tapes according to Claim 2 in Examples 1-4 with comparative polishing tapes of Comparative Example 1, which had a weft fiber fineness greater than the upper limit of Claim 2, Comparative Example 2, which had a cover factor less than the lower limit of Claim 2, and Comparative Example 3, which had a cover factor greater than the upper limit of Claim 2. As can be seen by the results in Table 3, the polishing tapes corresponding to Claim 2, clearly were superior to the comparative polishing tapes.

I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated:

~~Oct. 23, 2003~~

~~A. E. H. K.~~

April 16, 2004

A. E. H. K.